ABSTRACT

Title: Snow water content modelling in small catchments

This work deals with modeling of amount of snow cover, snow water equivalent, respectively, on an experimental catchment in the Jizerské hory Mts. Measuring and modelling of the snow cover is an important part of water management practice from the perspective of reservoir operation and flood management.

The first part of this thesis describes physical-geographical characteristics of the Jizerské hory Mts.especially from the climatological and hydrological point of view but also other charakteristics and conditions that may affect the dynamic of snow accumulation and melting are described with detailed focus on the experimental catchment of Černá Desná river – Jezdecká.

Two modelling approaches were applied to simulate snow water equivalent (SWE) based on observed precipitation and temperature. Beside the well knowen SNOW17 model a simple method based on heat index was developed in this work and its parameters were calibrated based on measured timeseries of daily average air temperature, daily precipitation and observed SWE for winter periods 2001 to 2009. Both methods provided reasonably accurate estimates of SWE over the tested period, however it was found that the results for winters with extreme conditions (very warm or very cold) are less sucessful.

Key words: Jizerské hory Mts., snow cover, snow water equivalent, modeling, SNOW17, degree-day